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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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EXAMINER

ART UNIT

PAPER NUMBER

DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

# Notice of Allowability

Application No.

09/911,495

Examiner

Scott Geyer

Applicant(s)

BARENBURG ET AL  
Art Unit

2813

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 25 July 2001.
2. ☒ The allowed claim(s) is/are 1-24.
3. ☒ The drawings filed on 25 July 2001 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
  - \* Certified copies not received: \_\_\_\_\_
5. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
  - (a) ☐ The translation of the foreign language provisional application has been received.
6. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE**

7. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
8. ☐ CORRECTED DRAWINGS must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No. \_\_\_\_\_.
  - (b) ☐ including changes required by the proposed drawing correction filed \_\_\_\_\_, which has been approved by the Examiner.
  - (c) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the top margin (not the back) of each sheet. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

9. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

- |  |   |
|--|---|
| 1 <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                             | 2 <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)          |
| 3 <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                    | 4 <input type="checkbox"/> Interview Summary (PTO-413). Paper No. _____             |
| 5 <input type="checkbox"/> Information Disclosure Statements (PTO-1449). Paper No. <u>2</u>            | 6 <input type="checkbox"/> Examiner's Amendment/Comment                             |
| 7 <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material | 8 <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
|  | 9 <input type="checkbox"/> Other  |

## DETAILED ACTION

### *Drawings*

1. The drawings as submitted on 25 July 2001 are acceptable.

### *Specification*

2. The specification and abstract as submitted are acceptable.

### *Allowable Subject Matter*

3. Claims 1-24 are allowed.
4. The following is an examiner's statement of reasons for allowance:

applicant's independent device claim 1 and independent method claim 13 recite a device and method for making such device, respectively, with a specific order of layers.

The device is constructed of the following: a mono-crystalline substrate, a layer of amorphous oxide, a layer of mono-crystalline perovskite oxide material, a mono-crystalline compound semiconductor material and an arrayed wavelength grating device.

The method for making the device is as follows: providing a mono-crystalline substrate, depositing a layer of mono-crystalline perovskite oxide material on the silicon substrate, forming an amorphous oxide layer between the perovskite layer and the silicon substrate, forming a mono-crystalline compound semiconductor layer over the perovskite oxide layer and forming an arrayed wavelength grating device over the mono-crystalline substrate.

Droopad et al. (US 2001/0013313 A1) teach a method and apparatus for growing mono-crystalline layers on a silicon wafer (paragraph 0004). Also, multiple mono-

crystalline layers can be grown on top of one another (paragraph 0005). Perovskite oxides can be layered as a buffer layer (column 0020).

Cheung et al. (6,071,795) teach a layered semiconductor device which can use a perovskite compound as a second substrate (see claims 1 and 15).

McKee et al. (5,876,866) teach a multi-layered semiconductor device structure and process for making the structure. The structure includes a perovskite oxide layer (column 1, lines 65 et seq., continuing to column 2, lines 1-3).

Baeuerle (4,63,826) teaches perovskite oxides as dielectric materials in the ceramic and single crystal form and used in electronics such as capacitors and piezo electric elements (column 1, lines 60 et seq.).

Japanese Patent (JP 01052329, to Sumitomo Electric Ind. Co.) teach an amorphous oxide layer deposited onto a metal substrate. An oxide super conducting layer containing perovskite is deposited on the amorphous oxide layer.

However, none of the above references, or any combination of the above references, specifically teach or suggest all layers or process of making those layers as recited in applicant's independent claims 1 and 13. Also, none of the references teach an arrayed wavelength grating device. Thus, all claims dependent on claims 1 and 13 are also allowable.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Conclusion***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott Geyer whose telephone number is (703)306-5866. The examiner can normally be reached on weekdays, between 9:00am - 5:30pm. The examiner may also be reached via e-mail: **scott.geyer@uspto.gov**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles L. Bowers can be reached on (703)308-2417. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-0194 for regular communications and (703)305-0194 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

sbg  
October 31, 2001



UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office

NOTICE OF ALLOWANCE AND ISSUE FEE DUE

APPLICATION NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT	DATE MAILED
First Named Applicant				

TITLE OF  
INVENTION

ATTY'S DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPLN. TYPE	SMALL ENTITY	FEE DUE	DATE DUE

**THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED.**

**THE ISSUE FEE MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED.**

**HOW TO RESPOND TO THIS NOTICE:**

**I. Review the SMALL ENTITY status shown above.**

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

- A. If the status is changed, pay twice the amount of the FEE DUE shown above and notify the Patent and Trademark Office of the change in status, or
- B. If the status is the same, pay the FEE DUE shown above.

If the SMALL ENTITY is shown as NO:

- A. Pay FEE DUE shown above, or
- B. File verified statement of Small Entity Status before, or with, payment of 1/2 the FEE DUE shown above.

**II. Part B-Issue Fee Transmittal should be completed and returned to the Patent and Trademark Office (PTO) with your ISSUE FEE. Even if the ISSUE FEE has already been paid by charge to deposit account, Part B Issue Fee Transmittal should be completed and returned. If you are charging the ISSUE FEE to your deposit account, section "4b" of Part B-Issue Fee Transmittal should be completed and an extra copy of the form should be submitted.**

**III. All communications regarding this application must give application number and batch number. Please direct all communications prior to issuance to Box ISSUE FEE unless advised to the contrary.**

**IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.**

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